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ABSTRACT

The Nuclear Training Division of Southern California Edison (SCE) has investigated, developed, and administered several college-level programs in order to enhance the training and education of personnel assigned to the San Onofre Nuclear Generating Station. Designed to upgrade current nuclear personnel and also to maintain positive community relations, the programs range from no-credit to degree programs. One of these SCE programs is the nuclear plant equipment operator training program at Saddleback Community College. Each of the 19 students enrolled in the first class received full reimbursement for their fees for three semesters as well as money for supplies and for weekly living expenses. The students were neither employees of, nor in any way obligated to, SCE. The only stipulation was that they maintain a 3.0 grade average. In all, the program enrollees had to complete three semesters of courses in areas such as speech communication, American government, chemistry, economics, algebra, and trigonometry before they were hired as SCE employees as well as additional training after they were hired in areas such as physics, power plant fundamentals, and instrumentation and control theory. Despite the fact that they were not obligated to do so, 18 of the original 19 program completers accepted employment with SCE. (MN)

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LINKING COMMUNITY COLLEGE

AND COMPANY-SPECIFIC TRAINING NEEDS

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The Nuclear Training Division of Southern California Edison has investigated, developed, and administered several college-level programs in order to enhance the training and education of personnel assigned to the San Onofre Nuclear Generating Station (SONGS). SCE laid plans to upgrade current nuclear personnel, to increase its skilled manpower pool by a bottom-feed program, to help retain highly trained employees, to be prepared for a possible requirement by the U.S. Nuclear Regulatory Commission (NRC) for college-level credit for operations personnel, and to maintain positive community relations. The programs range from no-credit to certificate, A.A., and B.S. levels at this time. Presented here is one of our approaches.

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Before describing the various approaches we at Southern California Edison have taken towards "college education", I should like to give a few definitions of what I consider "education" and what I consider "training".

To me, to "educate" someone is to provide knowledge, and develop intellectual capacities, such as reason, evaluation, and judgement. To "train" is to teach vocational performance skills in preparation for a specific job.

I have always advanced the point that we need both. If the idea of combining training and education had not existed before, then it would have had to be invented in response to today's demands. The ability to capitalize on our past experience rests on our capacity to stand outside our work and be able to analyze why we are doing things the way we are, how we can improve the way we are doing them, and then understand the why and how.

Broadly educated men and women tend to function better in society and in their jobs. The broad education tends to encourage adaptability, tolerance, flexibility, understanding, and ability to handle problems, whether technical or personal. Both theory and practice, both education and training, are required of us in order to benefit society, our industry, our company, and ourselves. Everyone benefits from our innovations, our improvements, and our functioning at optimum level.

Having presented my definitions and philosophy of training and education, I would now like to give a little background of how our programs came to be. I had been teaching chemistry at San Clemente High School for seven years before I joined Edison as a nuclear training administrator.

I previously had had two years of community college chemistry teaching experience, and university graduate level teaching of chemistry teachers, plus thirteen years of aerospace industrial experience. These experiences gave me the insight and impetus to pursue a combination college education-training program.

At the time, the company perceived the need to establish a stable source of manpower in the face of projected shortages of skilled nuclear technicians over the next decade. A bottom-feed program was seen as the best means to meet this challenge for reactor operators. The time had come for our college Work/Study Program to be born.

Up to this time, prospective reactor operators were being hired after serving in the nuclear Navy. Because this source of skilled people was being subjected to an increasing demand across the country, we opted to hire local youths interested in nuclear technology and train them for careers as licensed reactor operators at San Onofre Nuclear Generating Station.

I contacted the dean of instruction at our local community college, Saddleback Community College, who put me in touch with various

division and department chairs, instructors, and head counselor. We held several meetings. According to California state laws, when a vocational education program is being initiated, an advisory committee composed of both industry and education must be formed. There were more meetings and discussions and many phone calls.

We had to get our ideas accepted, developed our own operator training courses, got our curriculum approved, and credit hours passed by the school's Academic Senate, the County Area Deans of Vocational Education, the school's Board of Trustees, and State Office of the Chancellor. In the meantime, I had also met with the College President and the college district's Chancellor. We also had to work out a contract between the SCE legal department and the Saddleback Director of Financial Services. SCE had many hoops to go through.

Recruiting was undertaken in the counselor's offices, career centers, and classrooms of the dozen local high schools that feed into Saddleback Community College. We explained what an operator does, discussed shiftwork, and brought plant personnel with us. Emphasis was to paint an accurate and realistic picture. The response was sufficient to establish our first class of nineteen students.

Edison offered to pay 1) all fees to the college for three semesters, 2) $150 per semester for books and supplies, 3) $100 per week (while school is in session), and 4) tutors, counselors, and media services, and to take care of pre-registration and paperwork beforehand.

At the front end, the students would not be employees of SCE, and there would be no obligation of any kind. The only stipulation was that they were to maintain a 3.0 overall grade point average out of a 4.0 grade point average for three semesters in the courses that we required, then they would be hired into SCE for Nuclear Plant Equipment Operator (NPEO) training leading to becoming a licensed operator.

Of the original nineteen students from Class 1, fifteen have been on the Dean's List each semester. One left the program when he moved out-of-state with his family. Of the 18 students meeting the scholastic requirements, all elected to join Edison dispite the fact that there was no obligation to do so.

Before covering the NPEO program, I should like to discuss the screening process. We used the Plant Operator Selection System (POSS) Test that was validated in early 1982 by the Edison Electric Institute. After passing the test, the student was interviewed by a panel of five adults: an operator from the plant, a member of the company personnel department, an operator trainer, an education counselor, and a member of the community. The students were interviewed for motivation, perseverence, emotional stability, maturity, reliability, ability to follow directions, and sense of responsibility. After the panel made its positive decisions, the successful students were invited back to take the Minnesota Multiphasic Personality Inventory (MMPI).

Engineering Creative Problem Solving	3	Third Semester
Pre-Calculus	5	
Properties of Materials	3	
Group Dynamics and Leadership	3	

Total To Date: 43

In addition to "growing" our own operators, for the class entering in September 1982, we included in our goals an Associate of Arts in Nuclear Technology by June 1985 and articulation of this degree with the California State Polytechnic University at Pomona for a Bachelor of Science in Engineering Technology with a Nuclear Option. After earning an Associate of Arts degree in June 1985, the students will be put into intensive training for approximately eight months in preparation for the NRC Reactor Operator licensing examination in 1986.

The training and education that the students undergo after the three front-end semesters at Saddleback and after they are hired into SCE is as follows:

	Semester Units
Analytic Geometry and Calculus	4
Physics 3A and Lab	4
Power Plant Fundamentals	4
Physics 3B and Lab	4
Introduction to Power Systems	8
Instrumentation and Control Theory	8

Reactor Theory I	4
Reactor Theory II	4
Reactor Theory III	4

Internship Credits	44
Total Units to Date	87
Units necessary for an A.A.	60
Units Transferable to Cal Poly	55
Units Already Earned at Cal Poly	32

I should like to emphasize that an important element in the success of this program has been a member of my staff who is a qualified counselor and acts as program coordinator. She is available for individual counseling three afternoons per week, provides tutors when needed, and tracks the students. One of the three afternoons she meets with the students as a group and provides a speaker from the plant. We have had plant superintendents, emergency preparedness personnel, security, training instructors, health physics personnel, training administrators, etc. speak weekly to the group. A group cohesiveness has been built. They are being prepared for their future role as a member of a team in a demanding work environment.

The 18 students of Class 1 have been on-site since August 29. They all are doing extremely well. Class 2 is now at Saddleback in its first semester. We are now recruiting for Class 3.

I have gone into length only about one program that we have devised. We have approached the training and education solution in various other ways and with various other schools. Time does not permit me to take up the other programs. (I hope that what you have heard here will encourage you to link with your local college or local industry).

The Saddleback College Work/Study Program is indicative of one of the paths we are exploring. Southern California Edison has made a strong commitment to quality training and appreciates the need for educational support of training. I believe we are making progress toward achieving this training and education amalgam.

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After passing the MMPI and submitting five reference forms and transcripts, the students were invited to take part in SCE's program. We believe that our front-end screening process will help provide highly motivated employees with high prospects of becoming successful licensed reactor operators.

All applicants so far have been local residents who wish to live in the area, including some who are children of current company employees. This practice should help provide stability to the plants personnel.

In order to provide as much involvement as possible, we invited the students to tour the plant twice, had a family night to explain our program and plans, conducted the students on a tour of the Training and Education Center, and then, in turn, asked the students to guide area science teachers, deans, and professors on a plant and Training and Education Center tour.

This table indicates the curriculum set up for the students prior to their hire into our company:

		Semester Units	
	Speech Communication Fundamentals	3	
	Introduction to American Government	3	First
*	Intermediate Algebra	4	Semester
	General Chemistry 1A and Lab	5	
**	Written Composition	3	
	Economics 1	3	Second
	Trigonometry	3	Semester
	General Chemistry 1B and Lab	5	

* Department Placement Exam Possible

** Required English Placement Exam